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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Hidekuni Murakami

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EXAMINER

YEE, DEBORAH

ART UNIT

PAPER NUMBER

1733

MAIL DATE

DELIVERY MODE

11/02/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/574,553	MURAKAMI, HIDEKUNI	
	Examiner	Art Unit	
	Deborah Yee	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7, 11-16 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 11-16, 22 and 23 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 23, 2010 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The phrase "or so" is indefinite because the metes and bounds for this limitation are not defined. It is recommended to delete "or so".

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 1 to 7 and 11 to 16, 22 and 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Reason B in English translation of Japanese Office action dated July 29, 2009 issued in corresponding Japanese Application No. 2005-514520 ("NPL").

7. Reason B teaches Reference 2 (WO 99/47718) in view of Reference 3 (Japanese unexamined Publication No. H10-183247) would closely meet the present invention. Reason B states the following:

Reference 2 discloses that deterioration of magnetic properties can be restrained and increase strength if Cu is precipitated by the nm order in a low carbon steel sheet. As a result, a person with ordinary skill in the art can easily achieve the present invention based on the teaching of the nm order Cu precipitation for increasing high strength for a non-oriented electrical steel sheet described in Reference 3.

Response to Arguments

8. Applicant's arguments filed June 14, 2010 have been fully considered but they are not persuasive.

9. Applicant argued that claims patentably distinguish over WO'718 in view of JP'247 (Reason B of Japanese Office action) for the following reasons:

1) Applicant argued that JP'247 does not disclose or suggest a non-oriented electrical steel sheet of the present invention having Si in the amounts as presently claimed, i.e., Si: 2.0 to 6.5% (claim 1) and Si: 3.1 to 6.5 (claim 21).

2) Applicant further argued that JP'247 does not disclose or suggest the claimed metal phase comprised of Cu having a diameter of 0.1 μm or less in the steel sheet by means of holding the steel sheet in a heat treatment at a temperature range of 300°C to 650°C for 5 seconds or more. Japanese office action cited WO'718 for allegedly teaching that "deterioration of magnetic properties can be restrained and increase

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strength if Cu is precipitated by the nm order in a low carbon steel sheet". One skilled in the art, however, would not have modified JP'247 with the steel WO'718 because JP'247 is unrelated in utility and composition to WO'718. WO'718 is directed to steel containing < 0.02% Si and is suited for an aperture grill of a color picture tube whereas JP'247 is directed to non-oriented magnetic steel containing 0.1 to 2% Si suited as an iron core material for efficient motors.

10. In response to argument, it is the Examiner's position that steel of JP'247 teaches non-oriented electrical steel containing an upper Si limit of 2.0% which meets Applicant's claimed lower Si limit of 2.0%. Also despite the fact that WO'718 teaches a low -Si steel, it still teaches the general concept that Cu precipitated in nanometer size can promote increase strength without degrading magnetic properties in low-C steel. Since higher strength without degrading magnetic properties would be desired by JP'247 then it would be an obvious modification well within the skill of the artisan to age steel of JP'247 to produce Cu precipitation in view of WO'718.

11. In addition, JP'247 teaches steel having a grain size of 20 to <50 μm that meets average grain size of 3 to 300 μm recited by instant claim 13; and WO'718 teaches Cu precipitated in nanometer size that meets the claimed average Cu phase of 0.1 μm or less recited by instant claim 12. Prior art does not teach # density of metal Cu-phase precipitate or hardness and tensile strength as recited by one or more dependent claims but such properties would be expected since composition and process of making are closely met and in absence of evidence to the contrary.

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12. Applicant's arguments filed June 14, 2010 are persuasive over the rejection under 35 U.S.C. 103(a) rejection over Japanese patent 09-241793 (hereafter JP'793") in view of Table 1.1 in Essential and incident elements in steel and cast iron (hereafter "NPL"). As stated by Applicant, JP'793 does not teach 0.0031 to 0.0301% N; and JP'793 in paragraphs [0002]-[0003] teaches away from conventional strengthening method because ductility and toughness degrade as strength improves. NPL teaches nitrogen as a means to conventionally strengthen steel by forming nitrides. Consequently there is no motivation that would lead one of ordinary skill in the art to add N to the JP'793 steel to arrive at the claimed N range of 0.005 to 0.0301%.

Allowable Subject Matter

13. Claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: Claim 21 recites a non-oriented electrical steel sheet containing 3.1 to 6.5% Si whereas JP'247 teaches 0.1 to 2.0% Si and WO'718 teaches up to 0.02% Si.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah Yee whose telephone number is 571-272-1253. The examiner can normally be reached on monday-friday 6:00 am-2:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Deborah Yee/
Primary Examiner
Art Unit 1733

/DY/